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show files
File 155:MEDLINE(R) 1966-2002/Jul W1
File   5:Biosis Previews(R) 1969-2002/Jul W1
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File 351:Derwent WPI 1963-2002/UD,UM &UP=200244
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Set     Items   Description
S1        292   AU=WHITELEY M? OR AU=WHITELEY, M?
S2      38184   AU=LEE K? OR AU=LEE, K?
S3         36   AU=MUH U? OR AU=MUH, U?
S4        529   AU='GREENBERG E' OR AU='GREENBERG E P' OR AU='GREENBERG E -
              PETER' OR AU='GREENBERG E.' OR AU='GREENBERG E.P.' OR AU='GRE-
              ENBERG EVERETT P'
S5        129   E4-E6 OR E9 OR E10 OR E23 OR E24
S6      39133   S1-S5
S7       1593   QUORUM
S8     121217   SENSING
S9     201405   SIGNALING
S10        16   S6 AND (S7(3N)S8(3N)S9)
S11         8   RD S10 (unique items)
S12      1282   HOMOSERINE(3N)LACTONE
S13       100   S12 AND S6
S14        14   S13 AND POPULATION
S15        41   S13 AND DENSIT?
S16         3   S13 AND MODULAT?
S17        45   S13 AND REGULAT?
S18        36   S17 AND QUORUM
S19        18   RD S18 (unique items)
S20        31   S11 OR S19 OR S14
S21        24   RD S20 (unique items)
S22        26   S21 OR S16
S23        26   RD S22 (unique items)
S24        63   S7 (3N) S8 (3N) S9
S25        12   S24 AND MODULAT?
S26         6   RD S25 (unique items)
S27         4   S24 (5N) (DETECT? OR MEASUR? OR ASSAY? OR ANALYZ? OR ANALY-
              S? OR TEST?)
S28        31   S23 OR S26 OR S27
S29        29   RD S28 (unique items)
S30        48   S24 AND (TRANSCRIPTION OR GENE? ?)
S31        23   RD S30 (unique items)
S32        43   S29 OR S31
S33         3   S24 AND (LACZ OR GFP)
S34        43   S32 OR S33
S35         3   S24 AND INHIBIT?
S36        44   S35 OR S34
S37        44   RD S36 (unique items)
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37/7/1 (Item 1 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

13191110 21972785 PMID: 11976299

A quorum - sensing signaling system essential for genetic competence in Streptococcus mutans is involved in biofilm formation.

Li Yung-Hua; Tang Nan; Aspiras Marcelo B; Lau Peter C Y; Lee Janet H; Ellen Richard P; Cvitkovitch Dennis G

Dental Research Institute, University of Toronto, 124 Edward Street, Toronto, Ontario, Canada M5G 1G6.

Journal of bacteriology (United States) May 2002, 184 (10) p2699-708 , ISSN 0021-9193 Journal Code: 2985120R

Contract/Grant No.: DE 013230-02; DE; NIDCR

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

In a previous study, a quorum - sensing signaling system essential for genetic competence in Streptococcus mutans was identified, characterized, and found to function optimally in biofilms (Li et al., J. Bacteriol. 183:897-908, 2001). Here, we demonstrate that this system also plays a role in the ability of S. mutans to initiate biofilm formation. To test this hypothesis, S. mutans wild-type strain NG8 and its knockout mutants defective in comC, comD, comE, and comX, as well as a comCDE deletion mutant, were assayed for their ability to initiate biofilm formation. The spatial distribution and architecture of the biofilms were examined by scanning electron microscopy and confocal scanning laser microscopy. The results showed that inactivation of any of the individual genes under study resulted in the formation of an abnormal biofilm. The comC mutant, unable to produce or secrete a competence-stimulating peptide (CSP), formed biofilms with altered architecture, whereas the comD and comE mutants, which were defective in sensing and responding to the CSP, formed biofilms with reduced biomass. Exogenous addition of the CSP and complementation with a plasmid containing the wild-type comC gene into the cultures restored the wild-type biofilm architecture of comC mutants but showed no effect on the comD, comE, or comX mutant biofilms. The fact that biofilms formed by comC mutants differed from the comD, comE, and comX mutant biofilms suggested that multiple signal transduction pathways were affected by CSP. Addition of synthetic CSP into the culture medium or introduction of the wild-type comC gene on a shuttle vector into the comCDE deletion mutant partially restored the wild-type biofilm architecture and further supported this idea. We conclude that the quorum - sensing signaling system essential for genetic competence in S. mutans is important for the formation of biofilms by this gram-positive organism.

Record Date Created: 20020426

37/7/2 (Item 2 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

13096173 21874072 PMID: 11854465

Quorum-sensing regulators control virulence gene expression in Vibrio cholerae.

Zhu Jun; Miller Melissa B; Vance Russell E; Dziejman Michelle; Bassler Bonnie L; Mekalanos John J

Department of Microbiology and Molecular Genetics, Harvard Medical School, 200 Longwood Avenue, Boston, MA 02115, USA.

Proceedings of the National Academy of Sciences of the United States of America (United States) Mar 5 2002, 99 (5) p3129-34, ISSN 0027-8424
Journal Code: 7505876
Contract/Grant No.: AI18045; AI; NIAID
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed

The production of virulence factors including cholera toxin and the toxin-coregulated pilus in the human pathogen Vibrio cholerae is strongly influenced by environmental conditions. The well-characterized ToxR signal transduction cascade is responsible for sensing and integrating the environmental information and controlling the virulence regulon. We show here that, in addition to the known components of the ToxR signaling circuit, quorum - sensing regulators are involved in regulation of V. cholerae virulence. We focused on the regulators LuxO and HapR because homologues of these two proteins control quorum sensing in the closely related luminous marine bacterium Vibrio harveyi. Using an infant mouse model, we found that a luxO mutant is severely defective in colonization of the small intestine. Gene arrays were used to profile transcription in the V. cholerae wild type and the luxO mutant. These studies revealed that the ToxR regulon is repressed in the luxO mutant, and that this effect is mediated by another negative regulator, HapR. We show that LuxO represses hapR expression early in log-phase growth, and constitutive expression of hapR blocks ToxR-regulon expression. Additionally, LuxO and HapR regulate a variety of other cellular processes including motility, protease production, and biofilm formation. Together these data suggest a role for quorum sensing in modulating expression of blocks of virulence genes in a reciprocal fashion in vivo.

Record Date Created: 20020307

37/7/3 (Item 3 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

12949839 21666150 PMID: 11807077

Nonenzymatic turnover of an Erwinia carotovora quorum - sensing signaling molecule.

Byers Joseph T; Lucas Claire; Salmond George P C; Welch Martin
Department of Biochemistry, Cambridge University, CB2 1QW, Cambridge, United Kingdom.

Journal of bacteriology (United States) Feb 2002, 184 (4) p1163-71, ISSN 0021-9193 Journal Code: 2985120R
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed

The production of virulence factors and carbapenem antibiotic in the phytopathogen Erwinia carotovora is under the control of quorum sensing . The quorum - sensing signaling molecule, N-(3-oxohexanoyl)-L-homoserine lactone (OHHL), accumulates in log-phase culture supernatants of E. carotovora but diminishes in concentration during the stationary phase. In this study, we show that the diminution in OHHL was not due to sequestration of the ligand by the cells, although some partitioning did occur. Rather, it was caused by degradation of the molecule. The rate of stationary-phase degradation of OHHL was as rapid as the rate of log-phase accumulation of the ligand, but it was nonenzymatic

and led to a decrease in the expression of selected genes known to be under the control of quorum sensing. The degradation of OHHL was dependent on the pH of the supernatant, which increased as the growth curve progressed in cultures grown in Luria-Bertani medium from pH 7 to approximately 8.5. OHHL became unstable over a narrow pH range (pH 7 to 8). Instability was increased at high temperatures even at neutral pH but could be prevented at the growth temperature (30 degrees C) by buffering the samples at pH 6.8. These results may provide a rationale for the observation that an early response of plants which are under attack by Erwinia is to activate a proton pump which alkalizes the site of infection to a pH of >8.2.

Record Date Created: 20020124

37/7/4 (Item 4 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

12722204 21556881 PMID: 11700290

Regulation of gene expression by cell-to-cell communication: acyl-homoserine lactone quorum sensing.

Fuqua C; Parsek M R; Greenberg E P

Department of Biology, Indiana University, Bloomington, Indiana 47405, USA. cfuqua@bio.indiana.edu

Annual review of genetics (United States) 2001, 35 p439-68, ISSN 0066-4197 Journal Code: 0117605

Document type: Journal Article; Review; Review, Academic

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

Quorum sensing is an example of community behavior prevalent among diverse bacterial species. The term " quorum sensing" describes the ability of a microorganism to perceive and respond to microbial population density, usually relying on the production and subsequent response to diffusible signal molecules. A significant number of gram-negative bacteria produce acylated homoserine lactones (acyl-HSLs) as signal molecules that function in quorum sensing. Bacteria that produce acyl-HSLs can respond to the local concentration of the signaling molecules, and high population densities foster the accumulation of inducing levels of acyl-HSLs. Depending upon the bacterial species, the physiological processes regulated by quorum sensing are extremely diverse, ranging from bioluminescence to swarming motility. Acyl-HSL quorum sensing has become a paradigm for intercellular signaling mechanisms. A flurry of research over the past decade has led to significant understanding of many aspects of quorum sensing including the synthesis of acyl-HSLs, the receptors that recognize the acyl-HSL signal and transduce this information to the level of gene expression, and the interaction of these receptors with the transcriptional machinery. Recent studies have begun to integrate acyl-HSL quorum sensing into global regulatory networks and establish its role in developing and maintaining the structure of bacterial communities. (120 Refs.)

Record Date Created: 20011108

37/7/5 (Item 5 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

11176561 21189319 PMID: 11292813

Mapping stress-induced changes in autoinducer AI-2 production in chemostat-cultivated Escherichia coli K-12.

DeLisa M P; Valdes J J; Bentley W E

Center for Agricultural Biotechnology, University of Maryland Biotechnology Institute, University of Maryland, College Park, Maryland 20742, USA.

Journal of bacteriology (United States) May 2001, 183 (9) p2918-28, ISSN 0021-9193 Journal Code: 2985120R

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

Numerous gram-negative bacteria employ a cell-to-cell signaling mechanism, termed quorum sensing , for controlling gene expression in response to population density. Recently, this phenomenon has been discovered in Escherichia coli, and while pathogenic E. coli utilize quorum sensing to regulate pathogenesis (i.e., expression of virulence genes), the role of quorum sensing in nonpathogenic E. coli is less clear, and in particular, there is no information regarding the role of quorum sensing during the overexpression of recombinant proteins. The production of autoinducer AI-2, a signaling molecule employed by E. coli for intercellular communication, was studied in E. coli W3110 chemostat cultures using a Vibrio harveyi AI-2 reporter assay (M. G. Surrette and B. L. Bassler, Proc. Natl. Acad. Sci. USA 95:7046-7050, 1998). Chemostat cultures enabled a study of AI-2 regulation through steady-state and transient responses to a variety of environmental stimuli. Results demonstrated that AI-2 levels increased with the steady-state culture growth rate. In addition, AI-2 increased following pulsed addition of glucose, Fe(III), NaCl, and dithiothreitol and decreased following aerobiosis, amino acid starvation, and isopropyl-beta-D-thiogalactopyranosi de-induced expression of human interleukin-2 (hIL-2). In general, the AI-2 responses to several perturbations were indicative of a shift in metabolic activity or state of the cells induced by the individual stress. Because of our interest in the expression of heterologous proteins in E. coli, the transcription of four quorum-regulated genes and 20 stress genes was mapped during the transient response to induced expression of hIL-2. Significant regulatory overlap was revealed among several stress and starvation genes and known quorum-sensing genes .

Record Date Created: 20010409

37/7/6 (Item 6 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

11130527 21126957 PMID: 11226312

QscR, a modulator of quorum-sensing signal synthesis and virulence in Pseudomonas aeruginosa.

Chugani S A; Whiteley M ; Lee K M ; D'Argenio D; Manoil C; Greenberg E P

Department of Microbiology, University of Iowa, Iowa City, IA 52242, USA.

Proceedings of the National Academy of Sciences of the United States of America (United States) Feb 27 2001, 98 (5) p2752-7, ISSN 0027-8424 Journal Code: 7505876

Contract/Grant No.: GM59026; GM; NIGMS

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

The opportunistic pathogenic bacterium Pseudomonas aeruginosa uses quorum - sensing signaling systems as global regulators of virulence genes . There are two quorum-sensing signal receptor and signal generator pairs, LasR-LasI and RhlR-RhlI. The recently completed P. aeruginosa genome-sequencing project revealed a gene coding for a homolog of the signal receptors, LasR and RhlR. Here we describe a role for this gene , which we call qscR. The qscR gene product governs the timing of quorum-sensing-controlled gene expression and it dampens virulence in an insect model. We present evidence that suggests the primary role of QscR is repression of lasI. A qscR mutant produces the LasI-generated signal prematurely, and this results in premature transcription of a number of quorum-sensing-regulated genes . When fed to Drosophila melanogaster, the qscR mutant kills the animals more rapidly than the parental P. aeruginosa. The repression of lasI by QscR could serve to ensure that quorum-sensing-controlled genes are not activated in environments where they are not useful.

Record Date Created: 20010306

37/7/7 (Item 7 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

11110911 21117068 PMID: 11171981

The quorum - sensing transcriptional regulator TraR requires its cognate signaling ligand for protein folding, protease resistance, and dimerization.

Zhu J; Winans S C

Department of Microbiology, Cornell University, Ithaca, NY 14853, USA.

Proceedings of the National Academy of Sciences of the United States of America (United States) Feb 13 2001, 98 (4) p1507-12, ISSN 0027-8424
Journal Code: 7505876

Contract/Grant No.: GM 42893; GM; NIGMS

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

Complexes between the quorum-sensing regulator TraR and its inducing ligand autoinducer (AAI) are soluble in Escherichia coli, whereas apo-TraR is almost completely insoluble. Here we show that the lack of soluble TraR is due in large part to rapid proteolysis, inasmuch as apo-TraR accumulated to high levels in an E. coli strain deficient in Clp and Lon proteases. In pulse labeling experiments, AAI protected TraR against proteolysis only when it was added before the radiolabel. This observation indicates that TraR proteins can productively bind AAI only during their own synthesis on polysomes, whereas fully synthesized apo-TraR proteins are not functional AAI receptors. Purified apo-TraR was rapidly degraded by trypsin to oligopeptides, whereas TraR-AAI complexes were more resistant to trypsin and were cleaved at discrete interdomain linkers, indicating that TraR requires AAI to attain its mature tertiary structure. TraR-AAI complexes eluted from a gel filtration column as dimers and bound DNA as dimers. In contrast, apo-TraR was monomeric, and incubation with AAI under a variety of conditions did not cause dimerization. We conclude that AAI is critical for the folding of nascent TraR protein into its mature tertiary structure and that full-length apo-TraR cannot productively bind AAI and is consequently targeted for rapid proteolysis.

Record Date Created: 20010226

37/7/8 (Item 8 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

11101170 21142515 PMID: 11208787
Natural genetic transformation of Streptococcus mutans growing in biofilms.
Li Y H; Lau P C; Lee J H; Ellen R P; Cvitkovitch D G
Dental Research Institute, University of Toronto, Toronto, Ontario, Canada M5G 1G6.
Journal of bacteriology (United States) Feb 2001, 183 (3) p897-908, ISSN 0021-9193 Journal Code: 2985120R
Contract/Grant No.: DE 013230-01; DE; NIDCR
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
Streptococcus mutans is a bacterium that has evolved to be dependent upon a biofilm "lifestyle" for survival and persistence in its natural ecosystem, dental plaque. We initiated this study to identify the genes involved in the development of genetic competence in S. mutans and to assay the natural genetic transformability of biofilm-grown cells. Using genomic analyses , we identified a quorum - sensing peptide pheromone signaling system similar to those previously found in other streptococci. The genetic locus of this system comprises three genes , comC, comD, and comE, that encode a precursor to the peptide competence factor, a histidine kinase, and a response regulator, respectively. We deduced the sequence of comC and its active pheromone product and chemically synthesized the corresponding 21-amino-acid competence-stimulating peptide (CSP). Addition of CSP to noncompetent cells facilitated increased transformation frequencies, with typically 1% of the total cell population transformed. To further confirm the roles of these genes in genetic competence, we inactivated them by insertion-duplication mutagenesis or allelic replacement followed by assays of transformation efficiency. We also demonstrated that biofilm-grown S. mutans cells were transformed at a rate 10- to 600-fold higher than planktonic S. mutans cells. Donor DNA included a suicide plasmid, S. mutans chromosomal DNA harboring a heterologous erythromycin resistance gene , and a replicative plasmid. The cells were optimally transformed during the formation of 8- to 16-h-old biofilms primarily consisting of microcolonies on solid surfaces. We also found that dead cells in the biofilms could act as donors of a chromosomally encoded antibiotic resistance determinant. This work demonstrated that a peptide pheromone system controls genetic competence in S. mutans and that the system functions optimally when the cells are living in actively growing biofilms.
Record Date Created: 20010314

37/7/9 (Item 9 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

11036438 20580077 PMID: 11137045
The role of quorum sensing in the in vivo virulence of Pseudomonas aeruginosa.
Rumbaugh K P; Griswold J A; Hamood A N
Department of Microbiology and Immunology, Texas Tech. University Health

Sciences Center, 3601 4th St., Lubbock, Texas, 79430, USA.
Microbes and infection / Institut Pasteur (FRANCE) Nov 2000, 2 (14) p1721-31, ISSN 1286-4579 Journal Code: 100883508
Document type: Journal Article; Review; Review, Tutorial
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
Pseudomonas aeruginosa is an opportunistic pathogen that causes a wide variety of infections. The cell-density-dependent signaling mechanisms known as quorum sensing play a role in several of these infections including corneal, lung and burn wound infections. In addition, the quorum-sensing systems contribute to the ability of P. aeruginosa to form biofilms on medically important devices. The quorum-sensing systems accomplish their effect by controlling the production of different virulence factors and by manipulating the host immune response. (67 Refs.)
Record Date Created: 20010215

37/7/10 (Item 10 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

10924516 20500220 PMID: 11048725
Quorum -sensing signals indicate that cystic fibrosis lungs are infected with bacterial biofilms.
Singh P K; Schaefer A L; Parsek M R; Moninger T O; Welsh M J; Greenberg E P
Howard Hughes Medical Institute & Department of Internal Medicine, University of Iowa College of Medicine, Iowa City 52242, USA.
Nature (ENGLAND) Oct 12 2000, 407 (6805) p762-4, ISSN 0028-0836 Journal Code: 0410462
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
The bacterium Pseudomonas aeruginosa permanently colonizes cystic fibrosis lungs despite aggressive antibiotic treatment. This suggests that P. aeruginosa might exist as biofilms--structured communities of bacteria encased in a self-produced polymeric matrix--in the cystic fibrosis lung. Consistent with this hypothesis, microscopy of cystic fibrosis sputum shows that P. aeruginosa are in biofilm-like structures. P. aeruginosa uses extracellular quorum -sensing signals (extracellular chemical signals that cue cell-density-dependent gene expression) to coordinate biofilm formation. Here we found that cystic fibrosis sputum produces the two principal P. aeruginosa quorum -sensing signals; however, the relative abundance of these signals was opposite to that of the standard P. aeruginosa strain PAO1 in laboratory broth culture. When P. aeruginosa sputum isolates were grown in broth, some showed quorum -sensing signal ratios like those of the laboratory strain. When we grew these isolates and PAO1 in a laboratory biofilm model, the signal ratios were like those in cystic fibrosis sputum. Our data support the hypothesis that P. aeruginosa are in a biofilm in cystic fibrosis sputum. Moreover, quorum -sensing signal profiling of specific P. aeruginosa strains may serve as a biomarker in screens to identify agents that interfere with biofilm development.
Record Date Created: 20001025

37/7/11 (Item 11 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

10839806 20381290 PMID: 10922036
Acyl- homoserine lactone quorum sensing in gram-negative bacteria: a signaling mechanism involved in associations with higher organisms.
Parsek M R; Greenberg E P
Department of Civil Engineering, Northwestern University, Evanston, IL 60208, USA.
Proceedings of the National Academy of Sciences of the United States of America (UNITED STATES) Aug 1 2000, 97 (16) p8789-93, ISSN 0027-8424 Journal Code: 7505876
Contract/Grant No.: GM59026; GM; NIGMS
Document type: Journal Article; Review; Review, Tutorial
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
Recent advances in studies of bacterial gene expression have brought the realization that cell-to-cell communication and community behavior are critical for successful interactions with higher organisms. Species-specific cell-to-cell communication is involved in successful pathogenic or symbiotic interactions of a variety of bacteria with plant and animal hosts. One type of cell-cell signaling is acyl- homoserine lactone quorum sensing in Gram-negative bacteria. This type of quorum sensing represents a dedicated communication system that enables a given species to sense when it has reached a critical population density in a host, and to respond by activating expression of genes necessary for continued success in the host. Acyl- homoserine lactone signaling in the opportunistic animal and plant pathogen Pseudomonas aeruginosa is a model for the relationships among quorum sensing, pathogenesis, and community behavior. In the P. aeruginosa model, quorum sensing is required for normal biofilm maturation and for virulence. There are multiple quorum-sensing circuits that control the expression of dozens of specific genes that represent potential virulence loci. (49 Refs.)
Record Date Created: 20000905

37/7/12 (Item 12 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

10569793 20100773 PMID: 10633117
Conversion of the Vibrio fischeri transcriptional activator, LuxR, to a repressor.
Egland K A; Greenberg E P
Department of Microbiology and Graduate Program in Molecular Biology, University of Iowa, Iowa City, Iowa 52242, USA.
Journal of bacteriology (UNITED STATES) Feb 2000, 182 (3) p805-11, ISSN 0021-9193 Journal Code: 2985120R
Contract/Grant No.: 732GM8365; GM; NIGMS
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
The Vibrio fischeri luminescence (lux) operon is regulated by a quorum -sensing system that involves the transcriptional activator (LuxR) and an acyl- homoserine lactone signal. Transcriptional activation requires the presence of a 20-base inverted repeat termed the lux box at a position centered 42.5 bases upstream of the transcriptional start of the lux

operon. LuxR has proven difficult to study in vitro. A truncated form of LuxR has been purified, and together with sigma(70) RNA polymerase it can activate transcription of the lux operon. Both the truncated LuxR and RNA polymerase are required for binding to lux regulatory DNA in vitro. We have constructed an artificial lacZ promoter with the lux box positioned between and partially overlapping the consensus -35 and -10 hexamers of an RNA polymerase binding site. LuxR functioned as an acyl- homoserine lactone -dependent repressor at this promoter in recombinant Escherichia coli. Furthermore, multiple lux boxes on an independent replicon reduced the repressor activity of LuxR. Thus, it appears that LuxR can bind to lux boxes independently of RNA polymerase binding to the promoter region. A variety of LuxR mutant proteins were studied, and with one exception there was a correlation between function as a repressor of the artificial promoter and activation of a native lux operon. The exception was the truncated protein that had been purified and studied in vitro. This protein functioned as an activator but not as a repressor in E. coli. The data indicate that the mutual dependence of purified, truncated LuxR and RNA polymerase on each other for binding to the lux promoter is a feature specific to the truncated LuxR and that full-length LuxR by itself can bind to lux box-containing DNA.

Record Date Created: 20000210

37/7/13 (Item 13 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

10564283 20111001 PMID: 10647081

Calcium signaling in Streptococcus pneumoniae: implication of the kinetics of calcium transport.

Trombe M C

Universite Paul Sabatier, Laboratoire de Bacteriologie, Centre Hospitalo Universitaire de Rangueil, Toulouse, France. trombe@CICTofr

Microbial drug resistance (Larchmont, N.Y.) (UNITED STATES) Winter 1999 , 5 (4) p247-52, ISSN 1076-6294 Journal Code: 9508567

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

The kinetics and pharmacological characterization of a Na+/Ca2+ exchange system, essential for the growth of the extracellular pathogen Streptococcus pneumoniae in high-calcium media, demonstrated that calcium transport, in addition to its role in calcium homeostasis, is involved in the induction of autolysis and of competence for genetic transformation. These responses are expressed respectively in cultures entering the stationary phase and growing with exponential rates. Experimental virulence also appears to be modulated by the kinetics of calcium transport. Calcium transport in S. pneumoniae is electrogenic and shows sigmoidicity, indicating a cooperative mechanism with an inflexion point at 1 mM Ca2+. Mutant strains with Hill number values of 4 and 1, compared to 2 in the wild-type strain, were isolated. These changes were associated with altered regulation of competence and autolysis, and also with reduced experimental virulence. By contrast, they could not be related to a specific calcium requirement for growth. This indicates that the cooperativity of Ca2+ transport is not involved in vegetative growth, but rather regulates competence and autolysis. Competence and autolysis represent two growth-phase-dependent responses to an oligopeptide-activator exported to the medium, the competence-stimulating peptide. Addition of this activator

to noncompetent cells, triggers net and transient 45Ca2+ influx. One effect of the activator might be to activate a calcium transporter by enhancing its cooperativity. In addition to an increase in intracellular calcium, a transient membrane depolarization induced by electrogenic calcium influx may be part of the signaling mechanism. The competence activator is a quorum - sensing molecule whose synthesis is autoregulated. This regulation might involve calcium-mediated signaling. As an extracellular pathogen, S. pneumoniae probably develops in niches with variable calcium concentration. Interestingly, virulence depends strongly upon the kinetics of Ca2+ transport. Regulation of calcium influx may represent a common mechanism of sensing the environment, if the Na+/Ca2+ exchanger is the target for external mediators including the competence activator.
Record Date Created: 20000202

37/7/14 (Item 14 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

10519509 20040649 PMID: 10570171
Identification of genes controlled by quorum sensing in Pseudomonas aeruginosa.
Whiteley M ; Lee K M ; Greenberg E P
Department of Microbiology, University of Iowa, Iowa City, IA 52242, USA.
Proceedings of the National Academy of Sciences of the United States of America (UNITED STATES) Nov 23 1999, 96 (24) p13904-9, ISSN 0027-8424 Journal Code: 7505876
Contract/Grant No.: GM59026; GM; NIGMS
Comment in Proc Natl Acad Sci U S A. 2000 Feb 1;97(3) 958-9; Comment in PMID 10655466
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
Bacteria communicate with each other to coordinate expression of specific genes in a cell density-dependent fashion, a phenomenon called quorum sensing and response. Although we know that quorum sensing via acyl-homoserine lactone (HSL) signals controls expression of several virulence genes in the human pathogen Pseudomonas aeruginosa, the number and types of genes controlled by quorum sensing have not been studied systematically. We have constructed a library of random insertions in the chromosome of a P. aeruginosa acyl-HSL synthesis mutant by using a transposon containing a promoterless lacZ. This library was screened for acyl-HSL induction of lacZ. Thirty-nine quorum sensing- regulated genes were identified. The genes were organized into classes depending on the pattern of regulation . About half of the genes appear to be in seven operons, some seem organized in large patches on the genome. Many of the quorum sensing- regulated genes code for putative virulence factors or production of secondary metabolites. Many of the genes identified showed a high level of induction by acyl-HSL signaling.
Record Date Created: 20000106

37/7/15 (Item 15 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

10438293 99436623 PMID: 10504705
Plants genetically modified to produce N-acylhomoserine lactones

communicate with bacteria.

Fray R G; Throup J P; Daykin M; Wallace A; Williams P; Stewart G S; Grierson D

School of Biological Sciences, Nottingham University, Loughborough LE12 5RD, UK. rupert.fray@nottingham.ac.uk

Nature biotechnology (UNITED STATES) Oct 1999, 17 (10) p1017-20, ISSN 1087-0156 Journal Code: 9604648

Comment in Nat Biotechnol. 1999 Oct;17(10) 958-9; Comment in PMID 10504693

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

N-acylhomoserine lactones (AHLs) play a critical role in plant/microbe interactions. The AHL, N-(3-oxohexanoyl)-L-homoserine lactone (OHHL), induces exoenzymes that degrade the plant cell wall by the pathogenic bacterium Erwinia carotovora. Conversely, the antifungal activity of the biocontrol bacterium Pseudomonas aureofaciens 30-84 is due (at least in part) to phenazine antibiotics whose synthesis is regulated by N-hexanoylhomoserine lactone (HHL). Targeting the product of an AHL synthase gene (yenI) from Yersinia enterocolitica to the chloroplasts of transgenic tobacco plants caused the synthesis in plants of the cognate AHL signaling molecules (OHHL and HHL). The AHLs produced by the transgenic plants were sufficient to induce target gene expression in several recombinant bacterial AHL biosensors and to restore biocontrol activity to an HHL-deficient P. aureofaciens strain. In addition, pathogenicity was restored to an E. carotovora strain rendered avirulent as a consequence of a mutation in the OHHL synthase gene , carI. The ability to generate bacterial quorum - sensing signaling molecules in the plant offers novel opportunities for disease control and for manipulating plant/microbe interactions.

Record Date Created: 19991102

37/7/16 (Item 16 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

10432840 99432215 PMID: 10500159

Quinolone signaling in the cell-to-cell communication system of Pseudomonas aeruginosa.

Pesci E C; Milbank J B; Pearson J P; McKnight S; Kende A S; Greenberg E P ; Iglewski B H

Department of Microbiology, East Carolina University School of Medicine, Greenville, NC 27858, USA. epesci@brody.med.ecu.edu

Proceedings of the National Academy of Sciences of the United States of America (UNITED STATES) Sep 28 1999, 96 (20) p11229-34, ISSN 0027-8424 Journal Code: 7505876

Contract/Grant No.: 5-T32AI07362; AI; NIAID; RO1-AI33713; AI; NIAID

Comment in Proc Natl Acad Sci U S A. 2000 Feb 1;97(3) 958-9; Comment in PMID 10655466

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

Numerous species of bacteria use an elegant regulatory mechanism known as quorum sensing to control the expression of specific genes in a cell-density dependent manner. In Gram-negative bacteria, quorum sensing

systems function through a cell-to-cell signal molecule (autoinducer) that consists of a homoserine lactone with a fatty acid side chain. Such is the case in the opportunistic human pathogen Pseudomonas aeruginosa, which contains two quorum sensing systems (las and rhl) that operate via the autoinducers, N-(3-oxododecanoyl)-L- homoserine lactone and N-butyryl-L- homoserine lactone . The study of these signal molecules has shown that they bind to and activate transcriptional activator proteins that specifically induce numerous P. aeruginosa virulence genes. We report here that P. aeruginosa produces another signal molecule, 2-heptyl-3-hydroxy-4-quinolone, which has been designated as the Pseudomonas quinolone signal. It was found that this unique cell-to-cell signal controlled the expression of lasB, which encodes for the major virulence factor, LasB elastase. We also show that the synthesis and bioactivity of Pseudomonas quinolone signal were mediated by the P. aeruginosa las and rhl quorum sensing systems, respectively. The demonstration that 2-heptyl-3-hydroxy-4-quinolone can function as an intercellular signal sheds light on the role of secondary metabolites and shows that P. aeruginosa cell-to-cell signaling is not restricted to acyl-homoserine lactones.

Record Date Created: 19991021

37/7/17 (Item 17 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

10227098 99218285 PMID: 10200267

Acyl homoserine - lactone quorum -sensing signal generation.

Parsek M R; Val D L; Hanzelka B L; Cronan J E; Greenberg E P

Department of Microbiology, University of Iowa, Iowa City, IA 52242, USA.

Proceedings of the National Academy of Sciences of the United States of America (UNITED STATES) Apr 13 1999, 96 (8) p4360-5, ISSN 0027-8424
Journal Code: 7505876

Contract/Grant No.: 732 GM8365; GM; NIGMS; AI15650; AI; NIAID; GM 18740-01A1; GM; NIGMS

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

Acyl homoserine lactones (acyl-HSLs) are important intercellular signaling molecules used by many bacteria to monitor their population density in quorum -sensing control of gene expression. These signals are synthesized by members of the LuxI family of proteins. To understand the mechanism of acyl-HSL synthesis we have purified the Pseudomonas aeruginosa RhlI protein and analyzed the kinetics of acyl-HSL synthesis by this enzyme. Purified RhlI catalyzes the synthesis of acyl-HSLs from acyl-acyl carrier proteins and S-adenosylmethionine. An analysis of the patterns of product inhibition indicated that RhlI catalyzes signal synthesis by a sequential, ordered reaction mechanism in which S-adenosylmethionine binds to RhlI as the initial step in the enzymatic mechanism. Because pathogenic bacteria such as P. aeruginosa use acyl-HSL signals to regulate virulence genes, an understanding of the mechanism of signal synthesis and identification of inhibitors of signal synthesis has implications for development of quorum sensing-targeted antivirulence molecules.

Record Date Created: 19990517

37/7/18 (Item 18 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

10209382 99185211 PMID: 10066485
Self perception in bacteria: quorum sensing with acylated homoserine lactones.
Fuqua C; Greenberg E P
Department of Biology, Trinity University, San Antonio, TX 78212, USA. cfuqua@trinity.edu
Current opinion in microbiology (ENGLAND) Apr 1998, 1 (2) p183-9, ISSN 1369-5274 Journal Code: 9815056
Document type: Journal Article; Review; Review, Tutorial
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
A variety of Gram-negative bacteria produce membrane permeant, acylated homoserine lactone (HL) pheromones that act as cell density cues. Synthesis and response to these factors requires proteins homologous to the LuxI acylhomoserine lactone synthase and the LuxR transcription factor from Vibrio fischeri. Recent genetic and biochemical studies have begun to provide a mechanistic understanding of acyl HL dependent gene regulation . Examination of the role of acyl HLs in diverse bacteria positions LuxR-LuxI type systems within an increasingly broad regulatory context and suggests that, in some bacteria, they comprise a global regulatory circuit. (59 Refs.)
Record Date Created: 19990806

37/7/19 (Item 19 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

10133414 99121011 PMID: 9922236
Quorum sensing in Burkholderia cepacia: identification of the LuxRI homologs CepRI.
Lewenza S; Conway B; Greenberg E P ; Sokol P A
Department of Microbiology and Infectious Diseases, University of Calgary Health Sciences Center, Calgary, Alberta, Canada T2N 4N1.
Journal of bacteriology (UNITED STATES) Feb 1999, 181 (3) p748-56, ISSN 0021-9193 Journal Code: 2985120R
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
Burkholderia cepacia has emerged as an important pathogen in patients with cystic fibrosis. Many gram-negative pathogens regulate the production of extracellular virulence factors by a cell density-dependent mechanism termed quorum sensing, which involves production of diffusible N-acylated homoserine lactone signal molecules, called autoinducers. Transposon insertion mutants of B. cepacia K56-2 which hyperproduced siderophores on chrome azurol S agar were identified. One mutant, K56-R2, contained an insertion in a luxR homolog that was designated cepR. The flanking DNA region was used to clone the wild-type copy of cepR. Sequence analysis revealed the presence of cepI, a luxI homolog, located 727 bp upstream and divergently transcribed from cepR. A lux box-like sequence was identified upstream of cepI. CepR was 36% identical to Pseudomonas aeruginosa RhlR and 67% identical to SolR of Ralstonia solanacearum. CepI was 38% identical to RhlI and 64% identical to SolI. K56-R2 demonstrated a 67% increase in the production of the siderophore ornibactin, was protease

negative on dialyzed brain heart infusion milk agar, and produced 45% less lipase activity in comparison to the parental strain. Complementation of a cepR mutation restored parental levels of ornibactin and protease but not lipase. An N-acylhomoserine lactone was purified from culture fluids and identified as N-octanoylhomoserine lactone. K56-I2, a cepI mutant, was created and shown not to produce N-octanoylhomoserine lactone. K56-I2 hyperproduced ornibactin and did not produce protease. These data suggest both a positive and negative role for cepIR in the regulation of extracellular virulence factor production by B. cepacia.
Record Date Created: 19990223

37/7/20 (Item 20 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

10121117 99103246 PMID: 9890793
Competence in Bacillus subtilis is controlled by regulated proteolysis of a transcription factor.
Turgay K; Hahn J; Burghoorn J; Dubnau D
Department of Endocrinology and Reproduction, Faculty of Medicine, Erasmus University, Rotterdam, The Netherlands.
EMBO journal (ENGLAND) Nov 16 1998, 17 (22) p6730-8, ISSN 0261-4189 Journal Code: 8208664
Contract/Grant No.: AI10311; AI; NIAID
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
Competence is a physiological state, distinct from sporulation and vegetative growth, that enables cells to bind and internalize transforming DNA. The transcriptional regulator ComK drives the development of competence in Bacillus subtilis. ComK is directly required for its own transcription as well as for the transcription of the genes that encode DNA transport proteins. When ComK is sequestered by binding to a complex of the proteins MecA and ClpC, the positive feedback loop leading to ComK synthesis is interrupted. The small protein ComS, produced as a result of signaling by a quorum - sensing two-component regulatory pathway, triggers the release of ComK from the complex, enabling comK transcription to occur. We show here, based on in vivo and in vitro experiments, that ComK accumulation is also regulated by proteolysis and that binding to MecA targets ComK for degradation by the ClpP protease in association with ClpC. The release of ComK from binding by MecA and ClpC, which occurs when ComS is synthesized, protects ComK from proteolysis. Following this release, the rates of MecA and ComS degradation by ClpCP are increased in our in vitro system. In this novel system, MecA serves to recruit ComK to the ClpCP protease and connects ComK degradation to the quorum-sensing signal-transduction pathway, thereby regulating a key developmental process. This is the first regulated degradation system in which a specific targeting molecule serves such a function.
Record Date Created: 19990113

37/7/21 (Item 21 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

09860538 98284055 PMID: 9618536
Quorum sensing in Escherichia coli and Salmonella typhimurium.

Surette M G; Bassler B L
Department of Microbiology and Infectious Diseases, University of Calgary, 3330 Hospital Drive, North West, Calgary, Alberta, T2N-4N1, Canada.
Proceedings of the National Academy of Sciences of the United States of America (UNITED STATES) Jun 9 1998, 95 (12) p7046-50, ISSN 0027-8424 Journal Code: 7505876
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed

Escherichia coli and Salmonella typhimurium strains grown in Luria-Bertani medium containing glucose secrete a small soluble heat labile organic molecule that is involved in intercellular communication. The factor is not produced when the strains are grown in Luria-Bertani medium in the absence of glucose. Maximal secretion of the substance occurs in midexponential phase, and the extracellular activity is degraded as the glucose is depleted from the medium or by the onset of stationary phase. Destruction of the signaling molecule in stationary phase indicates that, in contrast to other quorum-sensing systems, quorum sensing in E. coli and S. typhimurium is critical for regulating behavior in the prestationary phase of growth. Our results further suggest that the signaling factor produced by E. coli and S. typhimurium is used to communicate both the cell density and the metabolic potential of the environment. Several laboratory and clinical strains of E. coli and S. typhimurium were screened for production of the signaling molecule, and most strains make it under conditions similar to those shown here for E. coli AB1157 and S. typhimurium LT2. However, we also show that E. coli strain DH5alpha does not make the soluble factor, indicating that this highly domesticated strain has lost the gene (s) or biosynthetic machinery necessary to produce the signaling substance. Implications for the involvement of quorum sensing in pathogenesis are discussed.
Record Date Created: 19980709

37/7/22 (Item 22 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

09569502 97457184 PMID: 9311122
Evidence of autoinducer activity in naturally occurring biofilms.
McLean R J; Whiteley M ; Stickler D J; Fuqua W C
Department of Biology, Southwest Texas State University, San Marcos 78666-4616, USA. RM12@swt.edu
FEMS microbiology letters (NETHERLANDS) Sep 15 1997, 154 (2) p259-63 , ISSN 0378-1097 Journal Code: 7705721
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed

N-Acyl homoserine lactone (AHL) molecules have been shown to act as mediators of population density-dependent (quorum-sensing) gene expression in numerous Gram-negative bacteria. Functions associated with AHL include light production in Vibrio fischeri, expression of virulence factors in Pseudomonas aeruginosa, and conjugation in Agrobacterium tumefaciens. In nature, bacteria often grow as surface-adherent biofilm communities. As biofilms typically contain high concentrations of cells, AHL activity and quorum-sensing gene expression have been proposed as

essential components of biofilm physiology. However, proof of AHL production within biofilms has heretofore been lacking. In this study we have employed a cross-feeding assay, using A, tumefaciens A136 (traI::lacZ) as an AHL-responsive reporter strain, to show the presence of naturally occurring AHL production in aquatic biofilms growing on submerged stones. AHL was detected in living biofilms and biofilm extracts, but was not present in rocks lacking a biofilm. This represents the first report of AHL activity in naturally occurring biofilms.
Record Date Created: 19971016

37/7/23 (Item 23 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

09181617 97061051 PMID: 8905097
Census and consensus in bacterial ecosystems: the LuxR-LuxI family of quorum -sensing transcriptional regulators .
Fuqua C; Winans S C; Greenberg E P
Department of Biology, Trinity University, San Antonio, Texas 78212, USA.
Annual review of microbiology (UNITED STATES) 1996, 50 p727-51,
ISSN 0066-4227 Journal Code: 0372370
Contract/Grant No.: GM15128; GM; NIGMS; GM42893; GM; NIGMS
Document type: Journal Article; Review; Review, Academic
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
The importance of accurate demographic information is reflected in the United States Constitution, Article 1, which provides for a decennial census of this country's human population . Bacteria also conduct a census of their population and do so more frequently, more efficiently, and as far we know, with little if any of the political contentiousness caused by human demographers. Many examples have been found of particular bacterial genes, operons, or regulons that are expressed preferentially at high cell densities. Many of these are regulated by proteins related to the LuxR and LuxI proteins of Vibrio fischeri, and by a diffusible pheromone called an autoinducer. LuxR and LuxI and their cognate autoinducer (3-oxohexanoyl homoserine lactone , designated VAI-1) provide an important model to describe the functions of this family of proteins. LuxR is a VAI-1 receptor and a VAI-1-dependent transcriptional activator, and LuxI directs the synthesis of VAI-1. VAI-1 diffuses across the bacterial envelope, and intracellular concentrations of it are therefore strongly increased by nearby VAI-1-producing bacteria. Similar systems regulate pathogenesis factors in Pseudomonas aeruginosa and Erwinia spp., as well as Tl plasmid conjugal transfer in Agrobacterium tumefaciens, and many other genes in numerous genera of gram-negative bacteria. Genetic analyses of these systems have revealed a high degree of functional conservation, while also uncovering features that are unique to each. (106 Refs.)
Record Date Created: 19970218

37/7/24 (Item 24 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

09020926 96382496 PMID: 8790360
Generation of cell-to-cell signals in quorum sensing: acyl homoserine lactone synthase activity of a purified Vibrio fischeri LuxI protein.
Schaefer A L; Val D L; Hanzelka B L; Cronan J E; Greenberg E P

Department of Microbiology, University of Iowa, Iowa City 52242, USA.
Proceedings of the National Academy of Sciences of the United States of America (UNITED STATES) Sep 3 1996, 93 (18) p9505-9, ISSN 0027-8424
Journal Code: 7505876
Contract/Grant No.: 732 GM8365; GM; NIGMS; AI15650; AI; NIAID
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed

Many bacteria use acyl homoserine lactone signals to monitor cell density in a type of gene regulation termed quorum sensing and response. Synthesis of these signals is directed by homologs of the luxi gene of Vibrio fischeri. This communication resolves two critical issues concerning the synthesis of the V. fischeri signal. (i) The luxI product is directly involved in signal synthesis-the protein is an acyl homoserine lactone synthase; and (ii) the substrates for acyl homoserine lactone synthesis are not amino acids from biosynthetic pathways or fatty acid degradation products, but rather they are S-adenosylmethionine (SAM) and an acylated acyl carrier protein (ACP) from the fatty acid biosynthesis pathway. We purified a maltose binding protein-LuxI fusion polypeptide and showed that, when provided with the appropriate substrates, it catalyzes the synthesis of an acyl homoserine lactone . In V. fischeri, luxi directs the synthesis of N-(3-oxohexanoyl) homoserine lactone and hexanoyl homoserine lactone . The purified maltose binding protein-LuxI fusion protein catalyzes the synthesis of hexanoyl homoserine lactone from hexanoyl-ACP and SAM. There is a high level of specificity for hexanoyl-ACP over ACPs with differing acyl group lengths, and hexanoyl homoserine lactone was not synthesized when SAM was replaced with other amino acids, such as methionine, S-adenosylhomocysteine, homoserine , or homoserine lactone , or when hexanoyl-SAM was provided as the substrate. This provides direct evidence that the LuxI protein is an auto-inducer synthase that catalyzes the formation of an amide bond between SAM and a fatty acyl-ACP and then catalyzes the formation of the acyl homoserine lactone from the acyl-SAM intermediate.
Record Date Created: 19961024

37/7/25 (Item 25 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

08853254 96213031 PMID: 8631679
Quorum sensing in Vibrio fischeri: probing autoinducer-LuxR interactions with autoinducer analogs.
Schaefer A L; Hanzelka B L; Eberhard A; Greenberg E P
Department of Microbiology, University of Iowa, Iowa City 52242, USA.
Journal of bacteriology (UNITED STATES) May 1996, 178 (10) p2897-901 , ISSN 0021-9193 Journal Code: 2985120R
Contract/Grant No.: 732 GM8365; GM; NIGMS
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed

The Vibrio fischeri luminescence genes are activated by the transcription factor LuxR in combination with a diffusible signal compound, N-(3-oxohexanoyl) homoserine lactone , termed the autoinducer. We have synthesized a set of autoinducer analogs. Many analogs with alterations in the acyl side chain showed evidence of binding to LuxR. Some appeared to

bind with an affinity similar to that of the autoinducer, but none showed a higher affinity, and many did not bind as tightly as the autoinducer. For the most part, compounds with substitutions in the homoserine lactone ring did not show evidence of binding to LuxR. The exceptions were compounds with a homocysteine thiolactone ring in place of the homoserine lactone ring. Many but not all of the analogs showing evidence of LuxR binding had some ability to activate the luminescence genes. None were as active as the autoinducer. While most showed little ability to induce luminescence, a few analogs with rather conservative substitutions had appreciable activity. Under the conditions we employed, some of the analogs showing little or no ability to induce luminescence were inhibitors of the autoinducer.

Record Date Created: 19960702

37/7/26 (Item 26 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

08427325 95183491 PMID: 7878006

A second N-acylhomoserine lactone signal produced by Pseudomonas aeruginosa.

Pearson J P; Passador L; Iglewski B H; Greenberg E P
Department of Microbiology, University of Iowa, Iowa City 52242.

Proceedings of the National Academy of Sciences of the United States of America (UNITED STATES) Feb 28 1995, 92 (5) p1490-4, ISSN 0027-8424
Journal Code: 7505876
Contract/Grant No.: AI33713; AI; NIAID
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed

Quorum sensing systems are used by a number of Gram-negative bacterial species to regulate specific sets of genes in a cell density-dependent manner. Quorum sensing involves synthesis and detection of extracellular signals termed autoinducers. As shown in recombinant Escherichia coli, the Pseudomonas aeruginosa autoinducer (PAI) N-(3-oxododecanoyl) homoserine lactone , together with the lasR gene product, activate the P. aeruginosa lasB gene. In this study, PAI was shown to activate lasB-lacZ expression in a P. aeruginosa lasR mutant containing a plasmid with lasR under the control of the lac promoter. The concentration of PAI necessary for half-maximal activation of the lasB-lacZ fusion was approximately 1 microM, which is within the range of PAI levels found in P. aeruginosa culture fluids. The effect of PAI on a P. aeruginosa lasR mutant containing a plasmid with lasR under the control of its own promoter and containing the lasB-lacZ fusion was also tested. Although extracts of culture fluid activated the lasB promoter in this construct, concentrations of PAI as high as 10 microM did not. This indicates the presence of a second extracellular factor (factor 2) that is required for lasB activation in P. aeruginosa when lasR is controlled by its own promoter but not when lasR is controlled by a strong foreign promoter. Factor 2 was shown to be N-butyrylhomoserine lactone. Although recombinant E. coli cells containing the PAI synthase gene, lasI, produce PAI, these cells do not produce factor 2. Furthermore, a P. aeruginosa mutant that produced about 0.1% of the wild-type level of PAI made about 5% of the wild-type level of factor 2. This indicates that factor 2 synthesis results from the activity of a gene product other than PAI synthase. The role of factor 2 in virulence gene regulation remains to be determined, but this compound may affect the

expression of lasR, which in turn activates transcription of numerous virulence genes in the presence of sufficient PAI. Apparently, multiple quorum sensing systems can occur and interact with each other in a single bacterial species.
Record Date Created: 19950404

37/7/27 (Item 1 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

13632184 BIOSIS NO.: 200200261005
Structural basis and specificity of acyl-homoserine lactone signal production in bacterial quorum sensing.
AUTHOR: Watson William T(a); Minogue Timothy D; Val Dale L; von Bodman Susanne Beck; Churchill Mair E A(a)
AUTHOR ADDRESS: (a)Department of Pharmacology, University of Colorado Health Sciences Center, 4200 E. Ninth Avenue, Denver, CO, 80262**USA
E-Mail: mair.churchill@uchsc.edu
JOURNAL: Molecular Cell 9 (3):p685-694 March, 2002
MEDIUM: print
ISSN: 1097-2765
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Synthesis and detection of acyl-homoserine lactones (AHLs) enables many gram-negative bacteria to engage in quorum sensing , an intercellular signaling mechanism that activates differentiation to virulent and biofilm lifestyles. The AHL synthases catalyze acylation of S-adenosyl-L-methionine by acyl-acyl carrier protein and lactonization of the methionine moiety to give AHLs. The crystal structure of the AHL synthase, Esal, determined at 1.8 ANG resolution, reveals a remarkable structural similarity to the N-acetyltransferases and defines a common phosphopantetheine binding fold as the catalytic core. Critical residues responsible for catalysis and acyl chain specificity have been identified from a modeled substrate complex and verified through functional analysis in vivo. A mechanism for the N-acylation of S-adenosyl-L-methionine by 3-oxo-hexanoyl-acyl carrier protein is proposed.

37/7/28 (Item 2 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

13604796 BIOSIS NO.: 200200233617
Bioassay for the identification of naturally-occurring quorum signaling inhibitors .
AUTHOR: McLean R J C(a); Pierson L S; Fuqua C
AUTHOR ADDRESS: (a)Southwest Texas State University, San Marcos, TX**USA
JOURNAL: Abstracts of the General Meeting of the American Society for Microbiology 101p587 2001
MEDIUM: print
CONFERENCE/MEETING: 101st General Meeting of the American Society for Microbiology Orlando, FL, USA May 20-24, 2001
ISSN: 1060-2011
RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Quorum-sensing activity has been shown to regulate a number of metabolic activities in bacteria including biofilm-formation and virulence. In many gram-negative bacteria, acyl homoserine lactones (AHLs) are used as quorum-sensing signals. While one alga, Delissea pulchra, has the ability to block biofilm formation through the production of AHL inhibitors , it is conceivable that other plants and organisms, particularly those in aquatic environments, may also produce AHL- inhibitors . Such compounds would have considerable promise as potential inhibitors of biofouling. Here we describe a simple bioassay whereby large numbers of plants and other substances can be screened for their production of potential AHL- inhibiting compounds. Candidates to be screened for AHL inhibition , are placed onto a petri plate and covered with an AHL-detecting organism such as Pseudomonas aureofaciens or Chromobacterium violaceum, suspended in a soft agar overlay. Pigment production (orange-colored phenazine in the case of P. aureofaciens, and violet-colored violacein in the case of C. violaceum) is regulated by quorum sensing. In this bioassay, potential AHL inhibitors will cause a loss of pigmentation in the indicator organisms. Overall, this simple procedure can facilitate the screening of large numbers of compounds for the identification of AHL inhibitors .

37/7/29 (Item 3 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

13583209 BIOSIS NO.: 200200212030
A quorum-sensing system essential for induction of genetic competence in Streptococcus mutans is involved in biofilm formation.
AUTHOR: Li Y H(a); Tang N(a); Chen W Y(a); Cvitkovitch D G(a)
AUTHOR ADDRESS: (a)University of Toronto, Dental Research Institute, Toronto, ON**Canada
JOURNAL: Abstracts of the General Meeting of the American Society for Microbiology 101p442 2001
MEDIUM: print
CONFERENCE/MEETING: 101st General Meeting of the American Society for Microbiology Orlando, FL, USA May 20-24, 2001
ISSN: 1060-2011
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: In a previous study, we identified and characterized a cell-cell signaling system essential for genetic competence in Streptococcus mutans. This system consists of five gene products, a competence-stimulating peptide (CSP) encoded by comC, its dedicated secretion apparatus (ComAB), its histidine kinase receptor (ComD) and the cognate response regulator (ComE). We demonstrated that this quorum sensing system functioned optimally when the cells were living in actively growing biofilms, suggesting that this system might play a role in the development of S. mutans biofilms. To test this hypothesis, a wild-type S. mutans strain (NG8) and individual mutants defective in comAB, C, D, E and were assayed for their ability to form biofilm. Spatial distribution and architecture of biofilms were examined by scanning electron microscopy (SEM). Growth rates of the planktonically-grown cultures were also measured. The results showed that

disruption of any of the genes under study resulted in a defect in biofilm formation. The comD and comE mutants had a two-fold decrease in biofilm mass when compared with the wild-type strain. The defect in biofilm formation by both mutants appeared to result from a decrease in their growth yields, although the resting cells of the comD mutant also showed a decrease in initial adherence to saliva- or mucin-coated polystyrene surfaces. Interestingly, the comAB and comC mutants showed a noticeable difference in biofilm architecture compared to the wild-type strain. Biofilms formed by these mutants appeared to be clumped together with 'web-like' micro-colonies. Addition of the synthetic CSP to growing cultures partially restored the wild-type biofilm structure. SEMs suggested that the variation in biofilm structure was likely due to formation of extremely long chains by these mutants, suggesting a link between the cell signaling system and cell segregation during division. We conclude that the quorum - sensing signaling system essential for genetic competence in S. mutans is also involved in the formation of biofilms by this organism.

37/7/30 (Item 4 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

13547719 BIOSIS NO.: 200200176540
Detection of N-acyl homoserine lactone expression in Legionella pneumophila.
AUTHOR: Zeigler S D(a); Pruckler J; Barbaree J M(a); Fields B S
AUTHOR ADDRESS: (a)Auburn University, Auburn, AL**USA
JOURNAL: Abstracts of the General Meeting of the American Society for Microbiology 101p100 2001
MEDIUM: print
CONFERENCE/MEETING: 101st General Meeting of the American Society for Microbiology Orlando, FL, USA May 20-24, 2001
ISSN: 1060-2011
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Numerous pathogens are known to employ genetic mechanisms that correlate virulence gene expression with a critical cell density. This phenomenon, known as quorum sensing , involves a communication module that utilizes signaling compounds generically referred to as N-acyl homoserine lactones (AHL). In order to determine if the intracellular pathogen Legionella pneumophila is a producer of AHL, and subject to density dependent gene expression, four biosensor strains were used to detect the presence of exogenous AHL, known as the autoinducer. The four strains, which include Chromobacterium violaceum CV026, Agrobacterium tumefaciens NT1 (pZLR4), and two recombinant Pseudomonas aeruginosa sensors Escherichia coli pKDT17 (PAI-1) and E. coli pECP61.5 (PAI-2), were used to determine the presence of AHL in cell-free culture supernatants. Cell-free supernatants were prepared from L. pneumophila RI243 grown in ACES broth and supplemented AB broth. When the supernatants were subjected to qualitative detection by standard plate overlay assay and AHL quantitation by Miller Beta-galactosidase assays, the results clearly showed that the L. pneumophila cultures grown in vitro produced no detectable autoinducer. In addition, testing of distilled culture extracts by thin layer chromatography (TLC) failed to detect any autoinducer signaling compound. While the bioassay strains

clearly detected the presence of both wild type and synthetic AHL, the presence of AHL in L. pneumophila extracts could not be demonstrated. Therefore, we conclude that N-acyl homoserine lactone is not produced by L. pneumophila when grown in vitro.

37/7/31 (Item 5 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

13381190 BIOSIS NO.: 200200010011
Characterization of quorum - sensing signaling molecules produced by Burkholderia cepacia G4.
AUTHOR: Park Jun-Ho; Hwang Ingyu; Kim Jin-Wan; Lee Soo O; Conway B; Greenberg E Peter ; Lee Kyoung (a
AUTHOR ADDRESS: (a)Department of Microbiology, Changwon National University, Changwon, Kyongnam, 641-773**South Korea E-Mail: klee@sarim.changwon.ac.kr
JOURNAL: Journal of Microbiology and Biotechnology 11 (5):p804-811 October, 2001
MEDIUM: print
ISSN: 1017-7825
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: In many Gram-negative bacteria, autoinducers, such as N-acyl-L-homoserine lactone (acyl-HSL) and its derivative molecules, mediate the cell-density-dependent expression of certain operons. The current study identified the autoinducers produced by Burkholderia cepacia G4, a trichloroethylene-degrading lagoon isolate, using TLC bioassays with Agrobacterium tumefaciens NT1 (pDCI41E33) and Chromobacterium violaceum CV026, and a GC-MS analysis. The Rf and Rt values and mass spectra were compared with those of synthetic compounds. Based on the analyses, it was confirmed that G4 produces N-hexanoyl (C6)-, N-octanoyl (C8)-, N-decanoyl (C10)-, N-dodecanoyl (C12)-HSL, and an unknown active species. The integration of the GC peak areas exhibited a ratio of C8-HSL:C10-HSL:C12-HSL at 3:17:1 with C6-HSL and C10-HSL production at trace and micromolar levels, respectively, in the culture supernatants. Mutants partially defective in producing acyl-HSLs were also partially defective in the biosynthesis of an antibiotic substance. These results indicate that the autoinducer-dependent gene regulation in G4 is dissimilar to the clinical B. cepacia strains isolated from patients with cystic fibrosis.

37/7/32 (Item 6 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

13373376 BIOSIS NO.: 200200002197
Acylated homoserine lactone detection in Pseudomonas aeruginosa biofilms by radiolabel assay.
BOOK TITLE: Methods in Enzymology Microbial growth in biofilms: Part A: Developmental and molecular biological aspects
AUTHOR: Schaefer Amy L(a); Greenberg E P (a); Parsek Matthew R
BOOK AUTHOR/EDITOR: Doyle Ron J: Ed

AUTHOR ADDRESS: (a)Department of Microbiology, College of Medicine, University of Iowa, Iowa City, IA, 52242**USA
JOURNAL: Methods in Enzymology (336):p41-47 2001
MEDIUM: print
BOOK PUBLISHER: Academic Press Inc., 525 B Street, Suite 1900, San Diego, CA, 92101-4495, USA
Academic Press Ltd., Harcourt Place, 32 Jamestown Road, London, NW1 7BY, UK
ISSN: 0076-6879 ISBN: 0-12-182237-0 (cloth)
DOCUMENT TYPE: Book
RECORD TYPE: Citation
LANGUAGE: English

07573889 EMBASE No: 1999064036

Quorum sensing in Vibrio fischeri: Elements of the luxl promoter

Egland K.A.; Greenberg E.P.
E.P. Greenberg, Department of Microbiology, Graduate Program Molecular Biology, University of Iowa, Iowa City, IA 52242 United States
AUTHOR EMAIL: epgreen@blue.weeg.uiowa.edu

Molecular Microbiology (MOL. MICROBIOL.) (United Kingdom) 1999, 31/4 (1197-1204)
CODEN: MOMIE ISSN: 0950-382X
DOCUMENT TYPE: Journal; Article
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH
NUMBER OF REFERENCES: 30

Although cell density-dependent regulation of the luminescence genes in Vibrio fischeri is a model for quorum sensing in Gram-negative bacteria, relatively little is known about the promoter of the luminescence operon. The luminescence operon is activated by the LuxR protein, which requires a diffusible acyl- homoserine lactone signal. The lux box, a 20 bp inverted repeat, is located in the luxl promoter region and is required for LuxR-dependent induction of the luminescence genes. Using primer extension, we mapped the LuxR-dependent transcriptional start site of the lux operon to 19 bp upstream of the luxl start codon. This indicates that the lux box is centred at -42.5 bp from the start of transcription. To gain evidence about the location of the -10 sequence, we placed a consensus -35 hexamer at different locations relative to the luxl transcriptional start site and measured constitutive levels of luminescence in recombinant Escherichia coli. The strongest constitutive promoter contained a TATAGT hexamer 17 bp from the -35 consensus sequence and 6 bp from the transcriptional start site. We propose that this is the -10 hexamer. Also in recombinant E. coli, both half-sites of the lux box were required for LuxR-dependent gene activation and for activation by an autoinducer-independent, monomeric LuxR deletion protein. LuxR-dependent activation of luminescence was eliminated when the lux box was centred at -47.5, -52.5 and -62.5 with respect to the luxl transcriptional start site. Our evidence, taken together with other information, points to a model in which a LuxR dimer overlaps the -35 region of the luxl promoter and functions as an ambidextrous activator with each LuxR subunit interacting with a different region of RNA polymerase.

37/7/34 (Item 2 from file: 73)
DIALOG(R)File 73:EMBASE

07108322 EMBASE No: 1997369581
A quorum-sensing system in the free-living photosynthetic bacterium Rhodobacter sphaeroides
Puskas A.; Greenberg E.P. ; Kaplan S.; Schaefer A.L.
A.L. Schaefer, Department of Microbiology, University of Iowa, Iowa City, IA 52242 United States
AUTHOR EMAIL: schaefer@blue.weeg.uiowa.edu
Journal of Bacteriology (J. BACTERIOL.) (United States) 1997, 179/23 (7530-7537)
CODEN: JOBAA ISSN: 0021-9193
DOCUMENT TYPE: Journal; Article
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH
NUMBER OF REFERENCES: 46

Rhodobacter sphaeroides is a free-living, photoheterotrophic bacterium known for its genomic and metabolic complexity. We have discovered that this purple photosynthetic organism possesses a quorum-sensing system. Quorum sensing occurs in a number of eukaryotic host-associated gram-negative bacteria. In these bacteria there are two genes required for quorum sensing, the luxR and luxI homologs, and there is an acylhomoserine lactone signal molecule synthesized by the product of the luxI homolog. In R. sphaeroides, synthesis of a novel homoserine lactone signal, 7,8-cis-N- (tetradecenoyl) homoserine lactone , is directed by a luxI homolog termed cerI. Two open reading frames immediately upstream of cerI are proposed to be components of the quorum-sensing system. The first of these is a luxR homolog termed cerR, and the second is a small open reading frame of 159 bp. Inactivation of cerI in R. sphaeroides results in mucoid colony formation on agar and formation of large aggregates of cells in liquid cultures. Clumping of CerI mutants in liquid culture is reversible upon addition of the acylhomoserine lactone signal and represents a phenotype unlike those controlled by quorum sensing in other bacteria.

37/7/35 (Item 3 from file: 73)
DIALOG(R)File 73:EMBASE

05629051 EMBASE No: 1994036448
Quorum sensing in bacteria: The LuxR-LuxI family of cell density-responsive transcriptional regulators
Fuqua W.C.; Winans S.C.; Greenberg E.P.
Department of Microbiology, University of Iowa,Iowa City, IA 52242 United States
Journal of Bacteriology (J. BACTERIOL.) (United States) 1994, 176/2 (269-275)
CODEN: JOBAA ISSN: 0021-9193
DOCUMENT TYPE: Journal; Short Survey
LANGUAGE: ENGLISH

37/7/36 (Item 1 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)

136364772 CA: 136(24)364772t JOURNAL
A quorum sensing-associated virulence gene of Pseudomonas aeruginosa encodes a LysR-like transcription regulator with a unique self-regulatory mechanism
AUTHOR(S): Cao, Hui; Krishnan, Gomathi; Goumnerov, Boyan; Tsongalis, John ; Tompkins, Ronald; Rahme, Laurence G.
LOCATION: Department of Surgery, Harvard Medical School, Massachusetts General Hopital and Boston Shriners Institute, Boston, MA, 02114, USA
JOURNAL: Proc. Natl. Acad. Sci. U. S. A. DATE: 2001 VOLUME: 98
NUMBER: 25 PAGES: 14613-14618 CODEN: PNASA6 ISSN: 0027-8424
LANGUAGE: English PUBLISHER: National Academy of Sciences
SECTION:
CA203004 Biochemical Genetics
CA210XXX MICROBIAL, ALGAL, AND FUNGAL BIOCHEMISTRY
IDENTIFIERS: quorum sensing signaling virulence gene mvfR Pseudomonas, Pseudomonas LysR like transcription factor MvfR virulence
DESCRIPTORS:
Transcriptional regulation...
activation, of phnAB operon, by MvfR; quorum sensing-assocd. virulence gene of Pseudomonas aeruginosa encodes LysR-like transcription regulator with unique self-regulatory mechanism
Transcription factors...
MvfR (multiple virulence factor Regulator), LysR-like; quorum sensing-assocd. virulence gene of Pseudomonas aeruginosa encodes LysR-like transcription regulator with unique self-regulatory mechanism
Gene,microbial...
mvfR; quorum sensing-assocd. virulence gene of Pseudomonas aeruginosa encodes LysR-like transcription regulator with unique self-regulatory mechanism
Operon...
phnAB, activation, by MvfR; quorum sensing-assocd. virulence gene of Pseudomonas aeruginosa encodes LysR-like transcription regulator with unique self-regulatory mechanism
Signal transduction,biological...
quorum sensing, , MvfR as indispensable player in; quorum sensing-assocd. virulence gene of Pseudomonas aeruginosa encodes LysR-like transcription regulator with unique self-regulatory mechanism
Pseudomonas aeruginosa... Virulence(microbial)...
quorum sensing-assocd. virulence gene of Pseudomonas aeruginosa encodes LysR-like transcription regulator with unique self-regulatory mechanism
CAS REGISTRY NUMBERS:
85-66-5 biosynthetic pathway, and MvfR; quorum sensing-assocd. virulence gene of Pseudomonas aeruginosa encodes LysR-like transcription regulator with unique self-regulatory mechanism
9004-06-2 9013-93-8 108985-27-9 MvfR controls prodn. of; quorum sensing-assocd. virulence gene of Pseudomonas aeruginosa encodes LysR-like transcription regulator with unique self-regulatory mechanism
152833-54-0 PAI-1 (P. aeruginosa autoinducer), MvfR controls prodn. of; quorum sensing-assocd. virulence gene of Pseudomonas aeruginosa encodes LysR-like transcription regulator with unique self-regulatory mechanism

37/7/37 (Item 2 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)

136304951 CA: 136(20)304951r JOURNAL
A two-component signal-transduction cascade in Carnobacterium piscicola LV17B: two signaling peptides and one sensor-transmitter
AUTHOR(S): Kleerebezem, M.; Kuipers, O. P.; de Vos, W. M.; Stiles, M. E.; Quadri, L. E. N.
LOCATION: Department of Flavour and Natural Ingredients, Wageningen Centre for Food Sciences; NIZO Food-Research, 6710 BA, Ede, Neth.
JOURNAL: Peptides (N. Y., NY, U. S.) DATE: 2001 VOLUME: 22 NUMBER: 10
PAGES: 1597-1601 CODEN: PPTDD5 ISSN: 0196-9781
PUBLISHER ITEM IDENTIFIER: 0196-9781(01)00494-6 LANGUAGE: English
PUBLISHER: Elsevier Science Inc.
SECTION:
CA203004 Biochemical Genetics
CA210XXX MICROBIAL, ALGAL, AND FUNGAL BIOCHEMISTRY
IDENTIFIERS: Carnobacterium quorumsensing signaling peptide signaltransduction, CbnR cbnK bacteriocin phernone Carnobacterium signaltransduction
DESCRIPTORS:
Transcriptional regulation...
activation; two signaling peptides and one sensor-transmitter are involved two-component signal-transduction cascade in Carnobacterium piscicola LV17B
Promoter(genetic element)...
cbn, CbnK and CbnR regulation of; two signaling peptides and one sensor-transmitter are involved two-component signal-transduction cascade in Carnobacterium piscicola LV17B
Gene,microbial...
CbnK; two signaling peptides and one sensor-transmitter are involved two-component signal-transduction cascade in Carnobacterium piscicola LV17B
Gene,microbial...
cbnR; two signaling peptides and one sensor-transmitter are involved two-component signal-transduction cascade in Carnobacterium piscicola LV17B
Gene,microbial...
cbnS; two signaling peptides and one sensor-transmitter are involved two-component signal-transduction cascade in Carnobacterium piscicola LV17B
Bacteriocins...
CS, CB2; two signaling peptides and one sensor-transmitter are involved two-component signal-transduction cascade in Carnobacterium piscicola LV17B
Peptides,biological studies...
CS, gene cbnS; two signaling peptides and one sensor-transmitter are involved two-component signal-transduction cascade in Carnobacterium piscicola LV17B
Proteins...
gene CbnK; two signaling peptides and one sensor-transmitter are involved two-component signal-transduction cascade in Carnobacterium piscicola LV17B
Proteins...
gene CbnR; two signaling peptides and one sensor-transmitter are involved two-component signal-transduction cascade in Carnobacterium piscicola LV17B
Signal transduction,biological...
quorum-sensing; two signaling peptides and one sensor-transmitter are involved two-component signal-transduction cascade in Carnobacterium

piscicola LV17B
Carnobacterium piscicola...
two-component signal-transduction cascade in Carnobacterium piscicola LV17B: two signaling peptides and one sensor-transmitter
CAS REGISTRY NUMBERS:
410071-70-4 amino acid sequence; two signaling peptides and one sensor-transmitter are involved two-component signal-transduction cascade in Carnobacterium piscicola LV17B

37/7/38 (Item 3 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)

136101242 CA: 136(7)101242n JOURNAL
Quorum signaling via AI-2 communicates the "metabolic burden" associated with heterologous protein production in Escherichia coli
AUTHOR(S): DeLisa, Matthew P.; Valdes, James J.; Bentley, William E.
LOCATION: Center for Agricultural Biotechnology, University of Maryland Biotechnological Institute, Department of Chemical Engineering, University of Maryland, College Park, MD, 2074, USA
JOURNAL: Biotechnol. Bioeng. DATE: 2001 VOLUME: 75 NUMBER: 4 PAGES: 439-450 CODEN: BIBIAU ISSN: 0006-3592 LANGUAGE: English PUBLISHER: John Wiley & Sons, Inc.
SECTION:
CA216009 Fermentation and Bioindustrial Chemistry
CA210XXX MICROBIAL, ALGAL, AND FUNGAL BIOCHEMISTRY
IDENTIFIERS: Escherichia heterologous protein expression metabolic stress quorum signaling
DESCRIPTORS:
Antibodies...
antibotulinal toxin fragment; quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli
Proteins...
autoinducer 2; quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli
Fermentation...
batch; quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli
Proteins...
coat, from Tobacco mosaic virus; quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli
Fermentation...
fed-batch; quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli
Reporter gene...
gfp; quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli
Proteins...
green fluorescent, reporter activity; quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli
Stress,microbial...
heterologous protein expression; quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in

Escherichia coli
Interleukin 2...
human; quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli
Signal transduction,biological...
quorum sensing; quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli
Escherichia coli...
quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli
Proteins...
VP5, from Infectious bursal disease virus; quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli
CAS REGISTRY NUMBERS:
9040-07-7P 117698-12-1P quorum signaling via AI-2 communicates "metabolic burden" assocd. with heterologous protein prodn. in Escherichia coli

37/7/39 (Item 4 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)

135238995 CA: 135(17)238995j CONFERENCE PROCEEDING
Quorum sensing in gram-negative bacteria: An important signaling mechanism in symbiosis and disease
AUTHOR(S): Greenberg, E. Peter
LOCATION: Department of Microbiology, University of Iowa, Iowa City, IA, 52242-1109, USA
JOURNAL: Microb. Ecol. Infect. Dis., (Two Int. Meet.), 1996 , 1998
EDITOR: Rosenberg, Eugene (Ed), DATE: 1999 PAGES: 112-122 CODEN: 69BGCS LANGUAGE: English PUBLISHER: ASM Press,Herndon, Va
SECTION:
CA210000 MICROBIAL, ALGAL, AND FUNGAL BIOCHEMISTRY
CA214XXX Mammalian Pathological Biochemistry
IDENTIFIERS: review quorum sensing gram neg bacteria signaling symbiosis disease
DESCRIPTORS:
Infection...
bacterial; quorum sensing in gram-neg. bacteria as important signaling mechanism in symbiosis and disease
Gram-negative bacteria... Signal transduction,biological... Symbiosis...
quorum sensing in gram-neg. bacteria as important signaling mechanism in symbiosis and disease

37/7/40 (Item 5 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)

134232717 CA: 134(17)232717c PATENT
Quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
INVENTOR(AUTHOR): Whiteley, Marvin; Lee, Kimberly M.; Greenberg, E. Peter ; Muh, Ute
LOCATION: USA
ASSIGNEE: University of Iowa Research Foundation; Quorum Sciences, Inc.

PATENT: PCT International ; WO 200118248 A2 DATE: 20010315
APPLICATION: WO 2000US24141 (20000901) *US PV153022 (19990903)
PAGES: 115 pp. CODEN: PIXXD2 LANGUAGE: English CLASS: C12Q-001/68; C07K-014/21; C12N-015/78 DESIGNATED COUNTRIES: AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY; BZ; CA; CH; CN; CR; CU; CZ; DE; DK; DM; DZ; EE; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; MZ; NO; NZ; PL; PT; RO; RU; SD; SE; SG DESIGNATED REGIONAL: GH; GM; KE; LS; MW; MZ; SD; SL; SZ; TZ; UG ; ZW; AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI; CM; GA; GN; GW; ML; MR; NE; SN; TD; TG
SECTION:
CA203003 Biochemical Genetics
CA210XXX MICROBIAL, ALGAL, AND FUNGAL BIOCHEMISTRY
IDENTIFIERS: sequence Pseudomonas quorum sensing signaling controlled gene, quorum sensing promoter reporter gene recombinant bacteria bactericide screening
DESCRIPTORS:
Gene,microbial...
ADE1, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ADE2, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ADE3, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ADE4, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ADE5, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ADE7, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ADE8, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ARG1, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ARG3, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ARG4, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
ARG5, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ARG6, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ARG8, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ARO2, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ARO7, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
ASP3, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
BAR1, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
cat, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
CHO1, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
cys-3, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
GAL1, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
GAL10, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
GAL7, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
GFP, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...

HIS1, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

HIS3, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

HIS4, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

HIS5, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

HOM3, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

HOM6, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

ILV1, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

ILV2, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

ILV5, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

INO1, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

INO2, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

INO4, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

lacZ, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

lasI, Pseudomonas mutant, for screening; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...

LEU1, quorum sensing promoter-linked; quorum sensing-controlled genes

of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
LEU2, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
LEU4, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
luciferase, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
LYS2, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
MAL, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
MEL, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
MET14, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
MET16, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
MET19, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
met2, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
MET3, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
MET4, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
MET8, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

Gene,microbial...
MET9, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of

quorum sensing signaling
DNA sequences...
of quorum sensing-controlled genes of Pseudomonas aeruginosa
Gene,microbial...
OLE1, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
PHO5, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
PRO1, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
PRO3, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Transposable element...
Pseudomonas mutagenesis with; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Reporter gene...
quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Bacteria(Eubacteria)... Gene,microbial... Gram-negative bacteria...
Pseudomonas aeruginosa... Signal transduction,biological...
quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
rhlI, Pseudomonas mutant, for screening; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
THR1, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
Gene,microbial...
THR4, quorum sensing promoter-linked; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
CAS REGISTRY NUMBERS:
1192-20-7D N-acyl derivs., quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
330035-64-8 330035-66-0 330035-67-1 330035-68-2 330035-69-3
330035-71-7 330035-72-8 330035-73-9 330035-74-0 330035-75-1
330035-76-2 330035-78-4 330035-79-5 330035-80-8 330035-81-9
330035-82-0 330035-83-1 330035-84-2 330035-85-3 330035-86-4
330035-87-5 330035-88-6 330035-89-7 330035-90-0 330035-91-1
330035-92-2 330035-93-3 330035-95-5 330035-96-6 330035-97-7
330035-98-8 330035-99-9 330036-00-5 330490-05-6 330490-06-7
330490-07-8 330490-08-9 nucleotide sequence; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

330036-02-7 330490-13-6 330490-14-7 unclaimed nucleotide sequence; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling
330477-42-4 330477-43-5 330477-44-6 330477-45-7 330477-46-8 330477-47-9 330477-48-0 330477-49-1 330477-50-4 330477-51-5 unclaimed sequence; quorum sensing-controlled genes of Pseudomonas and methods for identifying such genes and modulators of quorum sensing signaling

37/7/41 (Item 6 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)

132146629 CA: 132(12)146629c PATENT
Autoinducer synthase-modulating compounds for inhibition of bacterial growth
INVENTOR(AUTHOR): Cronan, John E., Jr.; Plapp, Bryce V.; Greenberg, E. Peter; Parsek, Matthew R.
LOCATION: USA
ASSIGNEE: The University of Iowa Research Foundation
PATENT: PCT International ; WO 200006177 A1 DATE: 20000210
APPLICATION: WO 99US17188 (19990729) *US 94988 (19980731) *US 227488 (19990106)
PAGES: 60 pp. CODEN: PIXXD2 LANGUAGE: English CLASS: A61K-031/70A; C12N-009/00B; C12P-021/02B; G01N-033/68B; C07H-019/20B; C07H-019/167B
DESIGNATED COUNTRIES: AE; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY; CA; CH; CN; CU; CZ; DE; DK; EE; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MD; MG; MK; MN; MW; MX; NO; NZ; PL; PT; RO; RU; SD; SE; SG; SI; SK; SL; TJ; TM; TR; TT; UA; UG; UZ; VN; YU; ZA; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM DESIGNATED REGIONAL: GH ; GM; KE; LS; MW; SD; SL; SZ; UG; ZW; AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI; CM; GA; GN; GW; ML; MR; NE; SN; TD; TG
SECTION:
CA201005 Pharmacology
CA210XXX MICROBIAL, ALGAL, AND FUNGAL BIOCHEMISTRY
IDENTIFIERS: autoinducer synthase homoserine lactone substrate antibacterial
DESCRIPTORS:
Proteins,specific or class...
ACP (acyl-carrier), acylated; modulation of autoinducer synthase mols. by binding to homoserine lactone binding site for inhibition of bacterial growth
AIDS(disease)... Cystic fibrosis...
inhibition of autoinducer synthase mols. for treatment of bacterial infections in immunocompromized individuals
Aeromonas hydrophila... Agrobacterium tumefaciens... Antibacterial agents ... Erwinia carotovora... Escherichia coli... Moritella marina... Pantoea agglomerans... Pantoea stewartii stewartii... Pseudomonas aeruginosa... Pseudomonas chlororaphis... Purine nucleotides... Ralstonia solanacearum... Rhizobium leguminosarum... Serratia proteamaculans proteamaculans... Vibrio harveyi... Yersinia enterocolitica...
modulation of autoinducer synthase mols. by binding to homoserine lactone binding site for inhibition of bacterial growth
Ceramics... Metals,biological studies... Paper... Textiles... Wood...
substrates; modulation of autoinducer synthase mols. by binding to

homoserine lactone binding site for inhibition of bacterial growth Human immunodeficiency virus 1...
vinhibition of autoinducer synthase mols. for treatment of bacterial infections in immunocompromized individuals
CAS REGISTRY NUMBERS:
63-68-3 107-92-6 biological studies, modulation of autoinducer synthase mols. by binding to homoserine lactone binding site for inhibition of bacterial growth
53-57-6 672-15-1 979-92-0 1192-20-7 1264-52-4 1264-57-9 2140-48-9 2457-80-9 2871-66-1 5060-32-2 6027-13-0 24386-85-4 29908-03-0 58944-73-3 67605-85-0 148710-31-0P 170680-84-9 197463-28-8P 257859-97-5 257901-49-8 257944-02-8 modulation of autoinducer synthase mols. by binding to homoserine lactone binding site for inhibition of bacterial growth
141-78-6 uses, acyl homoserine lactones extn. with; modulation of autoinducer synthase mols. by binding to homoserine lactone binding site for inhibition of bacterial growth

37/7/42 (Item 1 from file: 351)
DIALOG(R)File 351:Derwent WPI

014460354 **Image available**
WPI Acc No: 2002-281057/200232
New quinoline, benzopyran and benzothiopyran derivatives, useful in treatment of cystic fibrosis, are autoinducer molecules that inhibit or synergistically enhance activity of 2-heptyl-3-hydroxy-4-quinolone
Patent Assignee: UNIV EAST CAROLINA (UYEC-N); UNIV IOWA RES FOUND (IOWA); UNIV ROCHESTER (UYRP)
Inventor: GREENBERG E P ; IGLEWSKI B H; KENDE A S; MILBANK J B J; PEARSON J P; PESCI E C
Number of Countries: 097 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200218342	A2	20020307	WO 2001US27165	A	20010831	200232 B

Priority Applications (No Type Date): US 2000229715 P 20000831
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200218342	A2	E	42	C07D-215/00	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PH PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

Abstract (Basic): WO 200218342 A2
NOVELTY - Quinoline, benzopyran and benzothiopyran derivatives (I) are new.
DETAILED DESCRIPTION - Quinoline, benzopyran and benzothiopyran derivatives of formula (I) and their salts are new.
R1-R4=H, alkyl, alkenyl, alkynyl, OH, NH2, SH, OR6, NR7R8 or halo;
R5=H, SH, OH, OR6 or NR7R8;
R6=H or 1-4C alkyl;
R7, R8=H, 1-4C alkyl, O or S;

X, Y'=S, O or NR9;
R9=H, O, S or 1-4C alkyl; and
Q=tail group.

INDEPENDENT CLAIMS are also included for the following:

(1) a culture medium for microorganism comprising (I) to stimulate or promote the metabolism, growth and/or recovery of the microorganism;

(2) identifying a compound that modulates an autoinducer molecule in bacteria involving:

(a) providing a cell comprising quorum sensing controlled gene , in which the cell is responsive to an autoinducer molecule so as to generate a detectable signal;

(b) contacting the cell with an autoinducer in the presence or absence of a test compound; and

(c) detecting a change in the detectable signal to identify the test compound as a modulator of an autoinducer molecule in bacteria;

(3) regulating the expression of a gene in bacteria involving:

(i) inserting a gene into bacteria for enhancement of gene expression using (I) which enhances the activity of the LasR and/or RhlR protein; and

(ii) incubating the bacteria with (I) which enhances the activity of the LasR protein to regulate the expression of the gene ; and

(4) modulating quorum sensing signaling in bacteria involving providing bacteria comprising quorum sensing controlled gene responsive to the autoinducer molecule and incubating the bacteria with (I) such that the quorum sensing signaling in bacteria is modulated .

ACTIVITY - Antiseborrheic; dermatological; antibacterial;

MECHANISM OF ACTION - Gene expression regulator; LasR protein regulator; RhlR protein regulator; Modulator ; 2-heptyl-3-hydroxy-4-quinolone inhibitor ; Induction of virulence factor and biofilm formation inhibitors .

USE - (I) inhibits the infectivity of Pseudomonas aeruginosa(claimed); in the treatment of immunocompromised subject infected with Pseudomonas aeruginosa e.g. cystic fibrosis. (I) modulates quorum sensing signaling in bacteria. In the treatment of middle ear infection, osteomyelitis, acne, dental cavities and prostatitis.

ADVANTAGE - (I) regulates gene expression in bacteria such as Pseudomonas aeruginosa. The gene expresses a virulence factor, which is an alkylene protease such as an elastase or exotoxin A. (I) regulates the activity of the LasR and/or RhlR proteins of Pseudomonas aeruginosa. (I) modulates and inhibits the autoinducer activity of (II). (I) synergistically enhances the activity of (II). (I) is an antagonist of the LasR and/or RhlR proteins of Pseudomonas aeruginosa. (I) inhibits the activity of at least one microorganism that regulates expression of virulence factors. (I) affects the ability of the microorganism to initially infect or further infect an organism e.g. Pseudomonas aeruginosa.

pp; 42 DwgNo 0/0

Derwent Class: B02; D16

International Patent Class (Main): C07D-215/00

37/7/43 (Item 2 from file: 351)

013781762
WPI Acc No: 2001-265973/200127
Identifying modulators of quorum sensing signaling in Pseudomonas aeruginosa bacteria, useful for treating infections in immunocompromized patients
Patent Assignee: QUORUM SCI INC (QUOR-N); UNIV IOWA RES FOUND (IOWA)
Inventor: GREENBERG E P ; LEE K M ; MUH U ; WHITELEY M
Number of Countries: 094 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200118248	A2	20010315	WO 2000US24141	A	20000901	200127	B
AU 200073438	A	20010410	AU 200073438	A	20000901	200137	

Priority Applications (No Type Date): US 99153022 P 19990903
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200118248	A2	E	114	C12Q-001/68	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TZ UG ZW

AU 200073438	A	C12Q-001/68	Based on patent WO 200118248

Abstract (Basic): WO 200118248 A2
NOVELTY - A method (I) for identifying a modulator of quorum sensing signaling in Pseudomonas aeruginosa bacteria, is new.
DETAILED DESCRIPTION - A method (I) for identifying a modulator of quorum sensing signaling in bacteria, comprising:
(1) providing a cell which comprises a quorum sensing controlled gene (the cell is responsive to a quorum sensing signal molecule so that a detectable signal is generated);
(2) contacting the cell with a quorum sensing signal molecule in the presence and absence of a test compound; and
(3) detecting a change in the detectable signal to identify the test compound as a modulator of quorum sensing signaling in bacteria.
INDEPENDENT CLAIMS are included for the following:
(a) a mutant strain (II) of P. aeruginosa comprising a promoterless reporter gene inserted at a genetic locus in the chromosome of the P. aeruginosa (the locus comprises a nucleotide sequence selected from 36 defined nucleotide sequences ((S1)-(S36)) given in the specification);
(b) an isolated nucleic acid molecule (III) with a nucleotide sequence comprising:
(i) a regulatory sequence derived from the genome of P. aeruginosa (the regulatory sequence regulates a quorum sensing controlled genetic locus of the P. aeruginosa chromosome and the locus comprises a nucleotide sequence selected from (S1)-(S36)); and
(ii) a reporter gene operatively linked to the regulatory sequence;
(c) an isolated nucleic acid molecule (IV) comprising a quorum sensing controlled genetic locus derived from the genome of P. aeruginosa, or a sequence with at least 80% identity (the locus comprises a nucleotide sequence selected from (S1)-(S36)), operatively linked to a reporter gene ;
(d) an isolated nucleic acid molecule (V) comprising a

polynucleotide that hybridizes under stringent conditions to the complement of a nucleotide sequence comprising a quorum sensing controlled genetic locus derived from the genome of P. aeruginosa (the locus comprises a nucleotide sequence selected from (S1)-(S36)), operatively linked to a reporter gene ;

(e) a vector (VI) comprising (III), (IV) and/or (V); and

(f) a cell (VII) comprising (III), (IV) and/or (V).

ACTIVITY - Antibacterial.

No relevant biological data given.

MECHANISM OF ACTION - Disruption of quorum signaling (the process by which bacteria signal to one another to coordinate expression of specific genes in a cell density dependent fashion).

USE - The method (I) is used for identifying a modulator of quorum sensing signaling in P. aeruginosa bacteria (claimed). Modulators of quorum signaling may be used to treat P. aeruginosa infections. P. aeruginosa is an opportunistic pathogen of immunocompromized individuals (burn patients, cystic fibrosis patients, patients undergoing immunosuppressive therapy and patients with acquired immunodeficiency syndrome).

pp; 114 DwgNo 0/12

Derwent Class: B04; C06; D16

International Patent Class (Main): C12Q-001/68

International Patent Class (Additional): C07K-014/21; C12N-015/78

37/7/44 (Item 3 from file: 351)

DIALOG(R)File 351:Derwent WPI

013023337

WPI Acc No: 2000-195188/200017

Modulating activity of an autoinducer synthase e.g. to control bacterial growth, by contacting with a compound modulating binding of a substrate to the homoserine lactone substrate binding site of the autoinducer synthase

Patent Assignee: UNIV IOWA RES FOUND (IOWA)

Inventor: CRONAN J E; GREENBERG E P ; PARSEK M R; PLAPP B V

Number of Countries: 086 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200006177	A1	20000210	WO 99US17188	A	19990729	200017	B
AU 9955449	A	20000221	AU 9955449	A	19990729	200029	
EP 1100513	A1	20010523	EP 99941978	A	19990729	200130	
			WO 99US17188	A	19990729		

Priority Applications (No Type Date): US 99227488 A 19990106; US 9894988 P 19980731

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200006177	A1	E	60	A61K-031/70	

Designated States (National): AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZA ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW

AU 9955449	A	A61K-031/70	Based on patent WO 200006177

EP 1100513 A1 E A61K-031/70 Based on patent WO 200006177
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

Abstract (Basic): WO 200006177 A1

NOVELTY - Activity of an autoinducer synthase molecule is modulated using a compound modulating the binding of a substrate to the homoserine lactone substrate binding site of the autoinducer synthase.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) identifying compounds modulating autoinducer synthase molecule activity, by contacting the compound and molecule, and identifying (and optionally measuring) modulation , especially by using a labeled homoserine lactone substrate and measuring conversion of the substrate to a homoserine lactone product; and

(2) biologically active purified or recombinant autoinducer synthase molecules.

ACTIVITY - Antibacterial; immunomodulatory.

No biological data.

MECHANISM OF ACTION - Enzyme inhibitor.

USE - The method is useful to modulate the formation of bacterial quorum system autoinducer synthases, especially when the compound is applied to a substrate (organic or inorganic e.g. metal, ceramic etc.) to modulate (especially inhibit) bacterial growth on the substrate. It is especially useful to modulate bacterial biofilm development in vivo or in vitro e.g. to prevent the growth of bacterial biofilms on substrates as above. Autoinducer synthase blockers identified by method (1) can be administered therapeutically by the method to treat conditions associated with autoinducer synthase, especially the preferred compounds as above administered to block the activity of the autoinducer synthase Rh1I. They can especially be administered to inhibit the infectivity of pathogenic bacteria e.g. Pseudomonas aeruginosa or to treat immunocompromised subjects or individuals with disease states associated with biofilm development (e.g. humans with cystic fibrosis or human immunodeficiency virus (HIV)). They can be included in therapeutic compositions with a pharmaceutically acceptable carrier, useful as above.

pp; 60 DwgNo 0/1

Derwent Class: B02; B04; C02; C03; D16; S03
International Patent Class (Main): A61K-031/70
International Patent Class (Additional): C07H-019/167; C07H-019/20; C12N-009/00; C12P-021/02; G01N-033/68; C07H-019-167

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